

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Assistant Secretary for Housing-Federal Housing Commissioner	Series and Series Number: (Supersedes issue dated (July 27, 1994) MATERIALS RELEASE NO. 1242b
TO: DIRECTORS, HOUSING DIVISION DIRECTORS, MULTIFAMILY DIVISION DIRECTORS, SINGLE FAMILY DIVISION	ISSUE DATE: April 6, 1998
	REVIEW DATE: April 6, 2001

SUBJECT: 1. Product BCI Joists

2. Name and Address Boise Cascade Corporation
of Manufacturer P.O. Box 2400
 White City, OR 97503-0400

Data on the nonstandard product, described herein have been reviewed by the Department of Housing and Urban Development (HUD) and determination has been made that it is considered suitable from a technical standpoint for the use indicated herein. This Release does not purport to establish a comparative quality or value rating for this product as compared to standard products normally used in the same manner.

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USE: Floor joists and roof joists.

DESCRIPTION:

The BCI joist is fabricated from Douglas Fir Laminated Veneer Lumber (LVL) flanges and Plywood or Oriented Strand Board (OSB) webs. Flange widths are 1.5", 1.75", or 2.3". Flange thickness is either 1.3" or 1.5". The joist depths range from 9.5" to 20". The joists are available in lengths up to 66'. Refer to Table 2 for information on available product lines and their specific dimensions.

The joist webs are 3/8" in thickness. The web sections are installed in 4' lengths with the strength direction perpendicular to the LVL flanges. The web to web edges are finger jointed and glued. The flanges are routed to accept the web. The web and flange are pressure glued in a continuous operation.

REQUIREMENTS:

Adhesives shall meet the requirements of ASTM D 2559, Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions.

All plywood webs shall meet the requirements of PS 1-95, Construction and Industrial Plywood. Plywood for joists 12" in depth or less shall meet the requirements for a C-D Structural 1 panel. Plywood for joist depths greater than 12" shall meet the requirements for a C-C Structural 1 panel.

All OSB webs shall meet the requirements of PS-2, Performance Standard for Wood-Based Structural-Use Panels. OSB for all depths of joists shall meet the Exposure 1 requirements and have a span rating of 24/0.

The LVL flanges shall be manufactured to meet the requirements set forth in Materials Release 1241.

DESIGNS:

When loads or spans are greater than those described in Tables 7, 8, or 9, BCI joist applications shall be designed by a Structural Engineer in accordance with the design properties set forth in Table 1. The plans shall show the: loads, spans, joist sizes, framing, stiffeners, bracing, bridging, connections, and cutting, in accordance with the current Boise Cascade Engineered Wood Products Specifier Guide. The design calculations should accompany the plans.

Total I-joist deflection is caused by two types of stresses: flexure and shear. Flexure or bending deflection for BCI joists is calculated using standard engineering formula. Shear deflection is calculated using the formula $D=8M/K$. Where M is the maximum design moment and the value for K is shown in Table 1.

Allowable connector spacing for BCI joists are shown in Table 3. Placement of openings cut in the web shall conform to the information shown in Tables 4, 5, or 6. There shall be no cutting of flanges.

INSTALLATION:

Installation of BCI joists shall be in accordance with the current Boise Cascade Engineered Wood Products Specifier Guide. BCI joists shall be restricted to dry conditions of use where the moisture content of the joists will be less than 19%. Installation of web stiffeners shall be shown in Figure 1. Fire Resistive assemblies shall be in accordance with UL and FM current listing.

TABLE 1 - DESIGN PROPERTIES FOR BCI JOISTS⁽¹⁾

SERIES	DEPTH (in)	ALLOW MOM. (ft-lbs)	EI $\times 10^6$ (in ² -lbs)	K $\times 10^6$ (in-lb/in)	END REACTION(lbs)				STIFF ⁽⁵⁾ NAILS	INTERMEDIATE REACTION(lbs)				STIFF ⁽⁵⁾ NAILS	BLOCK PANEL ⁽⁶⁾	
					1 3/4" ⁽²⁾		3 1/2" ⁽²⁾			3 1/2" ⁽²⁾		6 1/4"			(lb/ft)	
					NO ⁽³⁾	YES ⁽⁴⁾	NO ⁽³⁾	YES ⁽⁴⁾		NO ⁽³⁾	YES ⁽⁴⁾	NO ⁽³⁾	YES ⁽⁴⁾		NO	YES ⁽⁴⁾⁽⁷⁾
40	9 1/2	2388	155	2.75	870	N/A	870	N/A	2-8d	1740	N/A	N/A	N/A	N/A	2800	N/A
	11 7/8	3187	265	3.37	1000	N/A	1080	N/A	2-8d	2000	N/A	N/A	N/A	N/A	2550	N/A
	14	3907	390	3.94	1100	N/A	1150	N/A	2-8d	2200	N/A	N/A	N/A	N/A	2350	N/A
45	9 1/2	3019	189	2.78	870	N/A	870	N/A	2-8d	1740	N/A	N/A	N/A	N/A	2800	N/A
	11 7/8	4031	321	3.41	1000	N/A	1080	N/A	2-8d	2000	N/A	N/A	N/A	N/A	2550	N/A
	14	4944	471	3.98	1100	N/A	1150	N/A	2-8d	2200	N/A	N/A	N/A	N/A	2350	N/A
60	16	5807	641	4.53	1280	N/A	1350	N/A	2-8d	2560	N/A	N/A	N/A	N/A	2150	N/A
	11 7/8	5348	420	3.41	1000	N/A	1080	N/A	2-8d	2000	N/A	N/A	N/A	N/A	2550	N/A
	14	6563	611	4.03	1100	N/A	1150	N/A	2-8d	2200	N/A	N/A	N/A	N/A	2350	N/A
	16	7710	829	4.58	1280	1350	1350	N/A	2-8d	2560	2700	N/A	N/A	2-8d	2150	N/A
	18	8862	1083	5.14	N/A	1650	N/A	1550	3-8d	N/A	3100	N/A	N/A	3-8d	N/A	3000
20	10015	1374	5.69	N/A	1750	N/A	1750	3-8d	N/A	3500	N/A	N/A	3-8d	N/A	3000	
400	9 1/2	2158	145	5.1	950	1125	1125	1275	2-8d	2000	2350	2550	2750	2-8d	2400	N/A
	11 7/8	2853	246	6.34	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2250	N/A
	14	3480	363	7.45	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2100	N/A
450	9 1/2	2537	168	5.16	950	1125	1125	1275	2-8d	2000	2350	2550	2750	2-8d	2400	N/A
	11 7/8	3356	284	6.41	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2250	N/A
	14	4094	417	7.53	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2100	N/A
600	16	4791	569	8.58	1025	1625	1525	1875	2-8d	2400	3650	2850	3750	6-8d	2000	N/A
	11 7/8	4806	385	6.52	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2250	N/A
	14	5884	562	7.65	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2100	N/A
	16	6864	763	8.72	1025	1625	1525	1875	2-8d	2400	3650	2850	3750	6-8d	2000	N/A
	18	7867	997	9.78	N/A	1750	N/A	2175	3-8d	N/A	4350	N/A	4550	7-8d	N/A	2600
20	8670	1266	10.8	N/A	1900	N/A	2250	3-8d	N/A	4500	N/A	4750	8-8d	N/A	2600	
40X	9 1/2	2388	157	6.13	950	1125	1125	1275	2-8d	2000	2350	2550	2750	2-8d	2650	N/A
	11 7/8	3187	268	6.36	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2500	N/A
	14	3907	396	7.47	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2400	N/A
45X	9 1/2	2803	182	5.2	950	1125	1125	1275	2-8d	2000	2350	2550	2750	2-8d	2650	N/A
	11 7/8	3743	310	6.43	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2500	N/A
	14	4590	457	7.55	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2400	N/A
60X	16	5392	623	8.6	1025	1625	1525	1875	2-8d	2400	3650	2850	3750	6-8d	2300	N/A
	11 7/8	4966	402	6.55	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2500	N/A
	14	6094	590	7.67	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2400	N/A
	16	7160	803	8.74	1025	1625	1525	1875	2-8d	2400	3650	2850	3750	6-8d	2300	N/A
	18	8229	1051	9.81	N/A	1750	N/A	2175	3-8d	N/A	4350	N/A	4550	7-8d	N/A	2700
20	9300	1337	10.9	N/A	1900	N/A	2250	3-8d	N/A	4500	N/A	4750	8-8d	N/A	2700	
60XL	11 7/8	5348	421	6.55	950	1425	1425	1475	2-8d	2200	2850	2650	3250	3-8d	2500	N/A
	14	6563	618	7.67	1025	1525	1475	1725	2-8d	2300	3450	2750	3650	6-8d	2400	N/A
	16	7710	840	8.74	1025	1625	1525	1875	2-8d	2400	3650	2850	3750	6-8d	2300	N/A
	18	8862	1100	9.81	N/A	1750	N/A	2175	3-8d	N/A	4350	N/A	4550	7-8d	N/A	2700
	20	10015	1398	10.88	N/A	1900	N/A	2250	3-8d	N/A	4500	N/A	4750	8-8d	N/A	2700

(1) For joist descriptions see TABLE 2. Calculate bending and shear deflection as described in "DESIGN".

(2) Minimum bearing length required.

(3) No web stiffener required.

(4) Web stiffener required see FIGURE 1.

(5) Number of nails required in web stiffener.

(6) Allowable vertical load capacities for BCI Joists used as blocking panels.

(7) 3 - 8d nails required in web stiffeners for blocking panels.

TABLE 2 - JOIST DESCRIPTIONS FOR BCI JOISTS

JOIST SERIES	FLANGE		WEB MATERIAL	RANGE OF JOIST DEPTHS (Inches)
	MATERIAL ¹	DIMENSIONS (depth x width) (Inches)		
BCI/40	24 Fb DF LVL	1.5 x 1.5	3/8" PLY	9 1/2 to 14
BCI/45	28 Fb DF LVL	1.5 x 1.75	3/8" PLY	9 1/2 to 16
BCI/60	28 Fb DF LVL	1.5 x 2.3	3/8" PLY	11 7/8 to 20
BCI/400	24 Fb DF LVL	1.3 x 1.5	3/8" OSB	9 1/2 to 14
BCI/450	24 Fb DF LVL	1.3 x 1.75	3/8" OSB	9 1/2 to 16
BCI/600	28 Fb DF LVL	1.3 x 2.3	3/8" OSB	11 7/8 to 20
BCI/40X	24 Fb DF LVL	1.5 x 1.5	3/8" OSB	9 1/2 to 14
BCI/45X	24 Fb DF LVL	1.5 x 1.75	3/8" OSB	9 1/2 to 16
BCI/60X	24 Fb DF LVL	1.5 x 2.3	3/8" OSB	11 7/8 to 20
BCI/60XL	28 Fb DF LVL	1.5 x 2.3	3/8" OSB	11 7/8 to 20

¹ LAMINATED VENEER LUMBER (LVL) AS DESCRIBED IN MR 1241

TABLE 3 - ALLOWABLE CONNECTOR SPACINGS FOR BCI JOISTS

CONNECTOR SIZE	MIN. FLANGE WIDTH = 1 1/2"		MIN. FLANGE WIDTH = 1 3/4"		NAILS PARALLEL TO THE GLUE LINE
	NAILS PERPENDICULAR TO GLUE LINE		NAILS PERPENDICULAR TO GLUE LINE		O.C. SPACING (Inches)
	O.C. SPACING (Inches)	END OF JOIST (Inches)	O.C. SPACING (Inches)	END OF JOIST (Inches)	
8d BOX	2.5	1.5	2	1.5	4
8d COMMON	3.5	1.5	2	1.5	6
10d & 12d BOX	3	1.5	2	1.5	6
10d & 12d COMMON	4.5	3	3	2	6
16d SINKER	4.5	3	3	2	6
16d COMMON	6	3	3	2	10

TABLE 4 - HOLE CHART FOR BCI JOISTS (PLYWOOD WEB)

JOIST DEPTH (in)	CIRCULAR HOLE DIAMETER (in)				
	COL #1	COL #2	COL #3	COL #4	COL #5
9 1/2	—	2	3	4	5
11 7/8	2	3	4 1/2	5 1/2	7
14	2	3 1/2	5 1/2	7	8 1/2
16	2 1/2	4 1/2	6 1/2	8 1/2	10 1/2
18	3	5	7 1/2	9 1/2	12
20	3	6	8 1/2	11	13 1/2
SPAN (ft)	MIN. DISTANCE FROM SUPPORT (ft-in)				
10	0' - 5"	1' - 0"	1' - 8"	2' - 3"	2' - 11"
12	0' - 6"	1' - 2"	2' - 0"	2' - 9"	3' - 7"
14	0' - 7"	1' - 4"	2' - 4"	3' - 2"	4' - 2"
16	0' - 8"	1' - 7"	2' - 8"	3' - 8"	4' - 9"
18	0' - 8"	1' - 9"	3' - 0"	4' - 1"	5' - 4"
20	0' - 10"	1' - 11"	3' - 3"	4' - 7"	5' - 11"
22	0' - 11"	2' - 2"	3' - 7"	5' - 0"	6' - 6"
24	1' - 0"	2' - 4"	3' - 11"	5' - 6"	7' - 1"
26	1' - 1"	2' - 6"	4' - 3"	5' - 11"	7' - 8"
28	1' - 2"	2' - 9"	4' - 7"	6' - 5"	8' - 3"
30	1' - 3"	2' - 11"	4' - 11"	6' - 10"	8' - 10"
32	1' - 4"	3' - 1"	5' - 3"	7' - 4"	9' - 6"
34	1' - 5"	3' - 4"	5' - 7"	7' - 9"	10' - 1"
36	1' - 6"	3' - 6"	5' - 11"	8' - 3"	10' - 8"
38	1' - 7"	3' - 8"	6' - 3"	8' - 8"	11' - 3"
40	1' - 8"	3' - 11"	6' - 7"	9' - 2"	11' - 10"

NOTES:

1. Values in the table are derived from the equation: $D = \{[(\text{Hole dia.}/\text{Joist depth} - 3) \cdot 0.13] \cdot 8727\} \cdot \text{Span}/2$
2. Table is based on simple span, uniform loading, and maximum allowable shear stresses from Table 1. End distance may be reduced proportionately for lesser shear stresses. For multiple span or concentrated loads, shear at the hole location must not exceed what a uniform load would produce at the distance shown in the table.
3. Where more than one hole is desired, the length of web between holes must equal or exceed twice the diameter of the largest hole.
4. The longest side of a rectangular hole shall not exceed 80 percent of the allowable round hole diameter.
5. The table is for hole sizes in the web of the joist; ducts, pipes, conduits, etc., passing through the hole, would have a smaller size.
6. A 1 1/2" diameter hole may be cut anywhere in the web of the joist. Flanges must never be cut.
7. For further information concerning holes, contact a Boise Cascade representative.

INSTRUCTIONS:

1. Use the joist depth and desired hole diameter to determine the column to use.
2. Use the joist span in the lower half of the table and read the dimension from the selected column. The dimension selected is the minimum distance from the centerline of the support to the center of the hole.
3. Values in-between those listed may be found by interpolation.

EXAMPLE: 14" joist with a 7" diameter hole and a 26' span length.

1. From the upper half of the table select Column 4.
2. For a 26' span and Column 4, reading the lower half of the table, the center of the hole must be a minimum of 5'-11" from the centerline of the nearest support.

TABLE 5 - HOLE CHART FOR BCI JOISTS (OSB WEB)

JOIST DEPTH (in)	CIRCULAR HOLE DIAMETER (in)				
	COL #1	COL #2	COL #3	COL #4	COL #5
9 1/2	—	2	3	4	5
11 7/8	2	3	4 1/2	5 1/2	7
14	2	3 1/2	5 1/2	7	8 1/2
16	2 1/2	4 1/2	6 1/2	8 1/2	10 1/2
18	3	5	7 1/2	9 1/2	12
20	3	6	8 1/2	11	13 1/2
SPAN (ft)	MIN. DISTANCE FROM SUPPORT (ft-in)				
	1' - 5"	1' - 10"	2' - 4"	2' - 10"	3' - 5"
10	1' - 5"	1' - 10"	2' - 4"	2' - 10"	3' - 5"
12	1' - 8"	2' - 2"	2' - 10"	3' - 5"	4' - 1"
14	1' - 11"	2' - 7"	3' - 3"	4' - 0"	4' - 9"
16	2' - 2"	2' - 11"	3' - 9"	4' - 7"	5' - 5"
18	2' - 6"	3' - 3"	4' - 3"	5' - 2"	6' - 1"
20	2' - 9"	3' - 8"	4' - 8"	5' - 9"	6' - 9"
22	3' - 0"	4' - 0"	5' - 2"	6' - 3"	7' - 5"
24	3' - 4"	4' - 4"	5' - 8"	6' - 10"	8' - 2"
26	3' - 7"	4' - 9"	6' - 1"	7' - 5"	8' - 10"
28	3' - 10"	5' - 1"	6' - 7"	8' - 0"	9' - 6"
30	4' - 2"	5' - 5"	7' - 1"	8' - 7"	10' - 2"
32	4' - 5"	5' - 10"	7' - 6"	9' - 2"	10' - 10"
34	4' - 8"	6' - 2"	8' - 0"	9' - 9"	11' - 6"
36	5' - 0"	6' - 7"	8' - 5"	10' - 3"	12' - 2"
38	5' - 3"	6' - 11"	8' - 11"	10' - 10"	12' - 10"
40	5' - 6"	7' - 3"	9' - 5"	11' - 5"	13' - 7"

NOTES: See Table 4

TABLE 6 - HOLE CHART FOR BCI JOISTS (OSB WEB)

JOIST DEPTH (in)	RECTANGULAR HOLE DIMENSIONS (height x length) (in)								
	COL #1	COL #2	COL #3	COL #4	COL #5	COL #6	COL #7	COL #8	COL #9
9 1/2	2 x 6	4 x 6	6 1/2 x 6	2 x 12	4 x 12	6 1/2 x 12	2 x 18	4 x 18	6 1/2 x 18
11 7/8	3 x 6	6 x 6	8 7/8 x 6	3 x 12	6 x 12	8 7/8 x 12	3 x 18	6 x 18	8 7/8 x 18
14	4 x 6	7 x 6	11 x 6	4 x 12	7 x 12	11 x 12	4 x 18	7 x 18	11 x 18
16	4 x 6	9 x 6	13 x 6	4 x 12	9 x 12	13 x 12	4 x 18	9 x 18	13 x 18
18	5 x 6	10 x 6	15 x 6	5 x 12	10 x 12	15 x 12	5 x 18	10 x 18	15 x 18
20	6 x 6	12 x 6	17 x 6	6 x 12	12 x 12	17 x 12	6 x 18	12 x 18	17 x 18
SPAN (ft)	MIN. DISTANCE FROM SUPPORT (ft-in)								
10	3' - 0"	3' - 6"	3' - 11"	3' - 6"	3' - 11"	4' - 4"	4' - 0"	4' - 5"	4' - 10"
12	3' - 7"	4' - 2"	4' - 8"	4' - 2"	4' - 9"	5' - 3"	4' - 9"	5' - 4"	5' - 10"
14	4' - 2"	4' - 10"	5' - 5"	4' - 10"	5' - 6"	6' - 1"	5' - 7"	6' - 3"	6' - 9"
16	4' - 9"	5' - 7"	6' - 3"	5' - 7"	6' - 4"	7' - 0"	6' - 4"	7' - 1"	7' - 9"
18	5' - 5"	6' - 3"	7' - 0"	6' - 3"	7' - 1"	7' - 10"	7' - 2"	8' - 0"	8' - 9"
20	6' - 0"	6' - 11"	7' - 8"	6' - 11"	7' - 11"	8' - 9"	7' - 11"	8' - 11"	9' - 8"
22	6' - 7"	7' - 8"	8' - 7"	7' - 8"	8' - 8"	9' - 7"	8' - 9"	9' - 9"	10' - 8"
24	7' - 2"	8' - 4"	9' - 4"	8' - 4"	9' - 6"	10' - 6"	9' - 6"	10' - 8"	11' - 8"
26	7' - 9"	9' - 0"	10' - 1"	9' - 0"	10' - 3"	11' - 4"	10' - 4"	11' - 6"	12' - 7"
28	8' - 5"	9' - 9"	10' - 10"	9' - 9"	11' - 1"	12' - 3"	11' - 1"	12' - 5"	13' - 7"
30	9' - 0"	10' - 5"	11' - 8"	10' - 5"	11' - 10"	13' - 1"	11' - 11"	13' - 4"	14' - 7"
32	9' - 7"	11' - 1"	12' - 5"	11' - 1"	12' - 8"	14' - 0"	12' - 8"	14' - 2"	15' - 6"
34	10' - 2"	11' - 10"	13' - 2"	11' - 10"	13' - 5"	14' - 10"	13' - 6"	15' - 1"	16' - 6"
36	10' - 9"	12' - 6"	14' - 0"	12' - 6"	14' - 3"	15' - 9"	14' - 3"	16' - 0"	17' - 6"
38	11' - 4"	13' - 2"	14' - 9"	13' - 2"	15' - 0"	16' - 7"	15' - 1"	16' - 10"	18' - 5"
40	12' - 0"	13' - 11"	15' - 6"	13' - 11"	15' - 10"	17' - 6"	15' - 10"	17' - 9"	19' - 5"

NOTES: See Table 4

TABLE 7 - BCI ALLOWABLE FLOOR SPANS^{1,2,3,4,5,6,7}

O.C. Spacing	40 Series			45 Series				60 Series				
	9 1/2"	11 7/8"	14"	9 1/2"	11 7/8"	14"	16"	11 7/8"	14"	16"	18"	20"
12"	18' 3"	21' 9"	24' 8"	19' 4"	23' 0"	26' 1"	28' 10"	24' 10"	28' 2"	31' 2"	34' 1"	36' 10"
16"	16' 8"	19' 10"	22' 1"	17' 7"	20' 11"	23' 9"	26' 3"	22' 7"	25' 7"	28' 4"	30' 11"	33' 6"
19"	15' 8"	18' 2"	20' 2"	16' 7"	19' 8"	22' 4"	24' 7"	21' 3"	24' 1"	26' 7"	29' 1"	31' 6"
24"	14' 1"	16' 3"	18' 0"	15' 5"	18' 3"	20' 3"	22' 0"	19' 8"	22' 0"	24' 8"	27' 0"	28' 10"
32"	12' 0"	13' 10"	15' 4"	13' 1"	15' 0"	16' 6"	18' 8"	15' 0"	16' 6"	19' 2"	23' 1"	24' 6"

¹Span table is based on a residential floor load of 40 psf live load and 10 psf dead load.

²Spans are measured from middle of bearing length to middle of bearing length (1 3/4 inch minimum bearing).

³Span table is based on 23/32 inch thick, 24 inches oc rated Sturd-I-Floor, glued and nailed to BCI Joists. The adhesive shall comply with Specification: ASTM D 3498-93. The Engineered Wood Association. The type and spacing of the fasteners shall comply with the code.

⁴Span table is based on L/360 live load deflection and L/240 total load deflection.

⁵Repetitive loading increase has been included, where applicable.

⁶Values represent simple spans.

⁷Span table based on 1 3/4 inch end reaction values with no web stiffeners (except for 18 inch & 20 inch joist depths where web stiffeners are required).

TABLE 8 - BCI ALLOWABLE FLOOR SPANS^{1,2,3,4,5,6,7}

O.C. Spacing	400 Series			450 Series				600 Series				
	9 1/2"	11 7/8"	14"	9 1/2"	11 7/8"	14"	16"	11 7/8"	14"	16"	18"	20"
12"	18' 2"	21' 6"	24' 1"	18' 11"	22' 6"	25' 6"	28' 3"	24' 8"	27' 11"	30' 10"	33' 9"	36' 6"
16"	16' 5"	18' 10"	20' 10"	17' 4"	20' 6"	22' 7"	24' 5"	22' 6"	25' 5"	28' 2"	30' 9"	33' 3"
19.2"	15' 0"	17' 3"	19' 0"	16' 3"	18' 8"	20' 8"	22' 4"	21' 2"	24' 0"	25' 8"	28' 7"	30' 4"
24"	13' 5"	15' 5"	17' 0"	14' 6"	16' 9"	18' 5"	20' 0"	19' 0"	20' 6"	20' 6"	25' 7"	27' 2"
32"	11' 5"	13' 1"	14' 5"	12' 4"	14' 2"	15' 4"	16' 4"	14' 3"	15' 4"	15' 4"	21' 9"	23' 1"

NOTES: See Table 7.

TABLE 9 - BCI ALLOWABLE FLOOR SPANS^{1,2,3,4,5,6,7}

O.C. Spacing	40X Series			45X Series				60X Series					60XL Series				
	9 1/2"	11 7/8"	14"	9 1/2"	11 7/8"	14"	16"	11 7/8"	14"	16"	18"	20"	11 7/8"	14"	16"	18"	20"
12"	18' 7"	22' 1"	25' 6"	19' 5"	23' 1"	26' 2"	29' 0"	24' 11"	28' 4"	31' 4"	34' 3"	37' 1"	25' 3"	28' 8"	31' 9"	34' 9"	37' 7"
16"	16' 11"	19' 11"	22' 1"	17' 8"	21' 1"	23' 11"	25' 11"	22' 9"	25' 10"	28' 7"	31' 3"	33' 10"	23' 1"	26' 2"	28' 11"	31' 8"	34' 3"
19.2"	15' 9"	18' 2"	20' 2"	16' 9"	19' 9"	21' 10"	23' 8"	21' 6"	24' 4"	25' 8"	29' 3"	31' 1"	21' 9"	24' 8"	26' 8"	29' 10"	32' 3"
24"	14' 1"	16' 3"	18' 0"	15' 3"	17' 8"	19' 7"	20' 6"	19' 0"	20' 6"	20' 6"	26' 2"	27' 10"	19' 0"	20' 6"	20' 6"	27' 2"	28' 10"
32"	12' 0"	13' 10"	15' 4"	13' 0"	14' 3"	15' 4"	15' 4"	14' 3"	15' 4"	16' 4"	22' 3"	23' 7"	14' 3"	15' 4"	15' 4"	23' 1"	24' 6"

NOTES: See Table 7

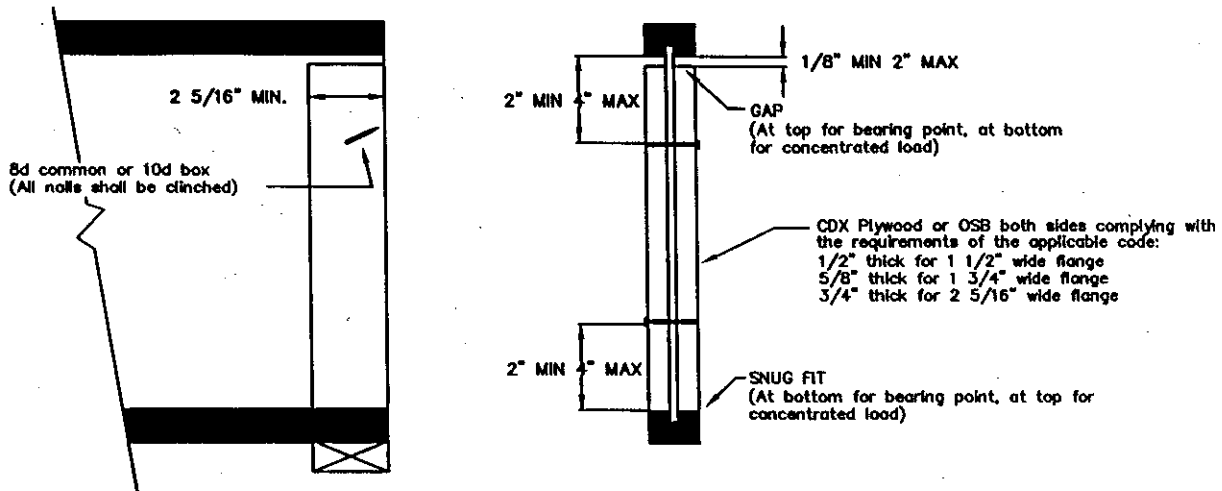


FIGURE 1 — WEB STIFFENERS

NOTES:

1. Web stiffeners shall be installed at bearing points as required in Table 1.
2. Intermediate web stiffeners are required at concentrated loads exceeding 1000 pounds and are to be installed in accordance with the intermediate reaction schedule in Table 1.
3. Web stiffeners are required on all joists supported by U-type hangers when sides of hanger do not extend up far enough to support top flanges laterally.
4. Nails shall be equally spaced vertically.

For SI: 1 inch = 25.4 mm

QUALITY CONTROL:

The quality control program for the BCI joists shall conform to the requirements of the Manufacturing Standards/Quality Control Manual for Prefabricated Wood I-Joists by the PFS Corporation on file with HUD.

CERTIFICATION AND IDENTIFICATION:

Boise Cascade Corporation shall certify that each BCI joist conforms to the requirements of this Materials Release (MR). PFS Corporation shall validate the manufacturer's certification that the joists meet the requirements of this MR. Each certified joist shall be marked with the following information:

1. Boise Cascade.
2. Identification of manufacturing plant, White City.
3. Product designation.
4. Registered PFS validation mark.
5. HUD MR 1242b.
6. Date of manufacture.

*HUD MR 1242a may be used instead of HUD MR 1242b if the joists are date stamped.

SAMPLE STAMPS



WARRANTY:

Boise Cascade Corporation, warrants the BCI joists against faulty performance resulting from faulty materials or workmanship in the manufacturing process for a period of twenty (20) years from the date of installation.

The liability of Boise Cascade Corporation, under this warranty shall be limited to the replacement of defective members and the cost of installation or, at the option of Boise Cascade Corporation, payment of same in lieu thereof.

This warranty is limited and applies to any materials failure due to the manufacturing of the BCI joist used and it does not extend to, nor will the manufacturer be liable for, any damage due to misuse, improper installation or any damage resulting from fire, lightning, or other cause beyond the manufacturer's control.

This manufacturer's warranty does not, in any way, relieve the builder of responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. A copy of this warranty shall be furnished by the builder to the owner.

MANUFACTURER'S RESPONSIBILITIES:

Issuance of this Materials Release (MR) commits the manufacturer to fulfill, as a minimum, the following:

1. Produce, label and certify the material, product or system in strict accordance with the terms of this MR.

2. Provide necessary corrective action in a timely manner for all cases of justified complaint, poor performance or failure reported by HUD.
3. When requested, provide the Office of Consumer and Regulatory Affairs, Manufactured Housing and Standards Division, HUD Headquarters, with a representative list of properties, in which the material, product or system has been used, including complete addresses or descriptions of locations and dates of installation.
4. Inform HUD in advance of changes in production facilities, methods, design of the product, company name, ownership or mailing address.

EVALUATION:

This MR shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this MR shall apply for a renewal or revision 90 days prior to the Review Date printed on this MR. Submittals for renewal or revision shall be sent to HUD Headquarters. Appropriate User Fee shall be sent to:

U.S. Department of Housing and Urban Development
Technical Suitability of Products Fees
P.O. Box 954199
St. Louis, MO 63195-4199

The holder of this MR may apply for revision at any time prior to the Review Date. Minor revisions may be in the form of a supplement to the MR.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will need to be submitted in accordance with Code of Federal Regulations 24 CFR 200.934, "User Fee System for the Technical Suitability of Products Program," and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of the MR. HUD will notify the manufacturer that the MR may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system,

2. the manufacturer has changed its organizational form without notifying HUD, or
3. the manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice of the specific reasons for cancellation, and the opportunity to present views on why the MR should not be canceled. No refund of fees will be made on a canceled document.

This Materials Release is issued solely for the captioned firm,
and is not transferable to any person or successor entity.
